

## ARMCHAIR WITH SEATLIFT

### FIELD OF INVENTION

The present invention relates to aids for persons who fall on the floor and are too weak to get up again on their own.

### BACKGROUND OF THE INVENTION

The background is applicants US Patent No. 5,816,655 on ARMCHAIR WITH SEATLIFT issued October 6, 1998, in the following called a Liftchair, which has a seat that can move substantially vertically up and down in a frame. The current invention describes and relates to an improvement on this prior invention and more particularly refers to a method of providing wheels to the liftchair in such a manner, that the liftchair automatically becomes mobile upon the seat being moved upward, such as, for instance, when it is desired to move the liftchair from one place to another, yet provides that the liftchair automatically becomes solidly stationary on the ground just prior to the lifting operation, during the time a person may be transferring from the ground onto the seat and until the person is firmly located on the seat, ready to be lifted up to a normal seated position in the liftchair. Upon the seat thereafter being activated to move upwards, the liftchair is automatically rendered mobile again, by contact between the seat and the ground being automatically eliminated.

### SUMMARY OF THE INVENTION

It is an object of this invention to provide a liftchair, as above, with a mechanism that automatically allows the liftchair to become immobile while a person transfers onto the seat, yet automatically allows the liftchair to become mobile as the seat moves up to its upper sitting position.

The liftchair is supplied with wheels, that may be small wheels located, for instance, one wheel in each lower corner of the liftchair frame. Some of the wheels may be swivel wheels, located in such a manner that allows the seat to go down between the wheels to the ground and if desired, slightly down beyond the wheels, so that the seat will lift the wheels slightly off the ground, automatically leaving the seat and the whole liftchair frictionally anchored to the ground due to the weight of the liftchair, ready for the safe transfer of a person from the ground onto the seat.

It is another object of this invention to provide a mechanism that allows an immobilized liftchair as above, to automatically become mobile when needed, by rotatably attaching wheelchair type wheels to each side of the liftchair. The wheelchair wheels extend down a little beyond the bottom of the liftchair frame allowing the wheels to contact and rest on the floor while the seat is in its

upper position, whereby the liftchair becomes mobile. Upon the seat being actuated to go vertically down to the ground, the seat is adapted to go down between the wheelchair wheels to the ground and slightly down beyond the wheels, so that the seat will lift the wheelchair wheels slightly off the ground in it's down position, leaving the seat and the liftchair automatically anchored to the ground by the full combined weight of the liftchair and wheels , while a person is transferring onto the seat, thereby automatically keeping the liftchair immobile to it's fullest extent during this transfer operation, allowing a person safely to transfer from the ground onto the seat of the liftchair without the liftchair moving away from the person during this operation.

It is another object of this invention to provide a liftchair that allows an immobilized liftchair as above to automatically become fully mobile again as soon as the seat and the person thereon have started on the way up to the upper position.

It is a further object of this invention to provide a liftchair as above in which the wheelchair wheels are supplied with brakes to control the mobility of the liftchair, and the liftchair is supplied with handles, so that a nurse or the like may move the liftchair around.

It is a further object of this invention to provide a liftchair, as above, that, with the seat in the mobile upper position allows the liftchair to be moved by the person in the liftchair, by the person turning the wheels by hand, or by the person turning handrails attached to the wheels.

It is another object of this invention to eliminate the backbreaking need for a nurse to lift a heavy person from the ground up to a seat on a chair or on a wheelchair.

## BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings:

FIG.1 is a perspective view of an armchair with a seatlift, as shown in applicants issued US patent No.5,816,655 in the following called a "liftchair", with one preferred embodiment of the improvement of the present invention located thereon, comprising wheels attached to the base of the frame of the liftchair, shown with the liftchair in it's immobile condition with the seat in it's lowest position, resting on the ground.

FIG.2 is a side elevation of a liftchair with another embodiment of the improvement of the present invention located thereon , comprising wheelchair type wheels rotatably attached to the sides of

the frame of the liftchair and one or two swivel wheels attached to the rear of the liftchair, shown in it's mobile condition with it's seat in it's upper position, out of contact with the ground and the wheels in contact with the ground. A handbrake is located on the frame to control mobility.

FIG.3 is a side elevation of the liftchair illustrated in FIG.2 shown in it's immobile condition with the seat in it's lowest position in firm contact with the ground, and the frame and wheels raised slightly off the ground.

FIG.4 is a front elevation of the liftchair shown in FIG.1 in it's mobile condition with the seat in it's upper position, with the seat out of contact with the ground and the wheels in contact with the ground.

FIG.5 is a side elevation of the liftchair shown in FIG.4 with the seat in it's upper position, out of contact with the ground and the wheels in contact with the ground.

FIG.6 is a side elevation of the liftchair shown in FIG.5 with the seat in it's lowest position, resting in full contact on the ground.

FIG.7 is a side elevation of the embodiment shown in FIG.2 of the present invention in which the frame is made of tubing and supplied with handles and a battery for operating the seat.

FIG.8 and FIG.9 show drawings from the original "Armchair with Seatlift" Patent No.5,816,655 showing the seat drive mechanism used in the present Patent Application.

## DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to FIG.1, a perspective view of a liftchair of the type patented in US Patent No.5,816,655 is shown at 100, supplied with one embodiment of the present improvement Patent Application, comprising 2 fixed wheels 110, located one at each rear lower corner 114, and 2 swivel wheels 110a at each front lower corner 114a at lower front connecting bar 111 of frame 112, and with seat 113 in it's lower position resting on ground 115.

In FIG.2 and FIG.3 a similar liftchair of above type is shown at 130, with a second embodiment of the present invention, the wheels in this embodiment comprising a pair of large wheelchair type wheels 131 rotatably mounted on each side 112a and 112b of frame 112 with a hand rail 132

mounted on each large wheelchair wheel, and a pair of smaller swivel wheels 133 mounted on brackets 154, one large wheel 131 and one smaller swivel wheel 133 being located on left side 112a and on right side 112b of liftchair 130. Conventional brakes 113 may be attached on either side 112a and 112b of liftchair 130 to control the mobility of liftchair 130, and handles 136 may be attached at top rear 136a of frame 112.

In FIG.3 the liftchair illustrated in FIG.2 is shown with seat 113 moved down below underside 138 of frame 112, of liftchair 130 to a position 138a, resting on ground 115, where it has lifted wheels 131 and 133 slightly above ground 115, making liftchair 130 particularly immobile and firmly stable resting on ground 115, since combined weights of liftchair 130 and weights of wheels 131 and 133 and handrails 132 are bearing down on seat 113 that is resting on ground 115.

In FIG.4 liftchair 100 illustrated in FIG.1 is shown with seat 113 in it's upper position 113a with 2 front swivel wheels 110a and 2 rear fixed wheels 110 (not visible) resting on ground 115, enabling liftchair 100 to become mobile when desired.

In FIG. 5 a side elevation of the liftchair illustrated in FIG.4 is shown with seat 113 in it's upper position 113a, with one pair of front wheels being swivel wheels and one pair of wheels 110 at rear of liftchair 100 being fixed wheels.

In FIG.6, liftchair 100 illustrated in FIG.5 is shown with seat 113 in it's lowest position 113b, with seat 113 resting on ground 115, making liftchair 100 immobile, facillitating transfer of a person from ground 115 onto seat 113 without seat 113 moving away from the transferring person during this transfer operation.

In FIG.7 a liftchair 140 of the type illustrated in FIG.2 and FIG.3 is shown at 140, in this embodiment having a frame 141 of tubular construction made of wheelchair type tubing, substantially in the form af a conventional wheelchair, liftchair 140 having 2 sides 142 and 143 and a back 144. A crossmember 145 is located at bottom front 146 frame 141, connecting sides 142 and 143 together. Similarly cross members 147, 147a and 147b are located at back 144 of frame 141 connecting sides 142 and 143 together at the back.

Identical side members 150 on either side 142 and 143 connect vertical front frame members 151 and vertical rear frame members 152 together and rotatably carry large wheelchair wheels 131 at 131a on either side 142 and 143 of frame 141. Brackets 154 at back 149 of frame 141 carry swivel wheels 155 and may carry a battery 162 to drive mechanism to lift seat 113 up and down

as shown in US Patent NO 5,816,655 (not shown here) . This seatlift mechanism drives seat 113 substantially vertically up and down on rollers 160, rolling on vertical rails 161 located at each side 142 and 143 of frame 141.

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## LIFTCHAIR NUMBERING

- 10 Liftchair
- 11 Frame
- 12 Frame left side
- 13 Frame right side
- 14 Upper rear cross member
- 15 Lower rear cross member
- 16 Front base cross member
- 17 Left vertical rail
- 18 Right vertical rail
- 19 Seat
- 19a Front open space
- 20 Left side plate
- 21 Right side of backplate
- 22 Back plate
- 24 Drive motor
- 25 Flanged pulleys
- 26 Outer side of plate 21
- 27 Forward side of rail 18
- 28 Rearward side of rail 18
- 29 Drive shaft
- 30 Lower rear location
- 32 Motor sprocket
- 33 Motor drive chain
- 34 Shaft drive sprocket
- 35 Lift chain sprocket
- 36 Lift chain
- 37 Chain attachment at upper end of plate 21
- 38 Upper flanged pulley
- 39 Upper end of rail 18
- 40 Lower flanged pulley

- 41 Secondary flanged pulley
- 42 Chain lower attachment on side plate 21
- 43 Control box
- 45 UP-DOWN switch
- 46 Activate switch
- 47 Flexible sheet
- 48 Upper end of sheet
- 49 Front edge of seat
- 50 Round rod
- 51 Space at rod
- 52 Lower end of sheet
- 100 1st. Embodiment
- 110 Swivel wheel
- 110a Fixed wheel
- 111 Lower front crossbar
- 112 Frame
- 112a Left side of frame
- 112b Right side of frame
- 113 Seat
- 113a Seat in upper position
- 113b Seat in lower position
- 114 Rear lower corner of frame
- 114a Front lower corner of frame
- 115 Ground
- 130 Liftchair Second embodiment
- 131 Large wheelchair wheel
- 131a Large wheelchair point of attachment
- 132 Hand rail
- 133 Small wheelchair swivel wheel
- 136 Handle
- 136a Top rear of frame
- 137 Brake
- 138 Underside of frame
- 138a Lowered position of seat
- 140 Tubularly constructed frame embodiment
- 142 Left side of tubular constructed frame

- 143 Right side of tubularly constructed frame
- 144 Back of tubularly constructed frame
- 145 Lower front cross member
- 146 Bottom front of tubularly constructed frame
- 147 Lower back cross member
- 147a Middle back cross member
- 147b Upper back cross member
- 150 Side horizontal cross member
- 151 Front vertical frame member
- 152 Rear vertical frame member
- 154 Swivel wheel bracket
- 155 Tubular frame swivel wheel
- 160 Vertical rail
- 161 Roller
- 162 Battery

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